

ROLLING RIVERS TRAILER USER GUIDE

Trailer Transport and Use



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Rolling Rivers trailers serve as teaching aids for watershed education programs. The trailers contain sand molded into winding rivers lined with a community or toy machinery, animals, vegetation, and houses. The flip of a pump switch brings the simulation to life as water flows throughout the virtual watershed. The trailers serve as an invaluable resource to explain watershed health principles to students of all ages. Students stand on the trailer's steps while teachers and chaperones peer over their heads as they all watch the river erode a river bank. The trailers are used to enact outreach scenarios that focus on river energy, riparian health, erosion, diversions and dams, nonpoint source pollution and the effects of developments in floodplains and on river banks.

There are four Rolling Rivers trailers in use across the state. This User Guide provides detailed instructions for their use, from set-up to take-down. More information on setting up specific scenarios and lesson plans can be found online at: <http://dnrc.mt.gov/divisions/cardd/conservation-districts>. This guide was created in cooperation with Big Sky Watershed Corps, Cascade Conservation District, Lewis & Clark Conservation District, Sun River Watershed Group, Flathead County Conservation District, Richland County Conservation District, and the Montana Association of Conservation Districts.

For assistance or more information about the Rolling Rivers Trailers, contact:

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TRANSPORTING THE ROLLING RIVERS TRAILER

Trailer 101

1. Make sure your vehicle meets the safety requirements to tow a Rolling Rivers Trailer, i.e. 2" ball hitch.
2. Check the pressure in each of the trailer's tires and verify it is **35 PSI**.
3. Check the towing vehicle's tire pressure is suitable.
4. Raise the trailer's jack so the transporting vehicle's towing ball can be aligned directly beneath it.
5. Verify the trailer's hitch lock is unlocked.
6. Lower the trailer's jack to connect the trailer to the transporting vehicle's towing ball.
7. Lock the trailer's hitch lock to secure the tongue of the trailer to the vehicle's towing ball.
8. Attach the trailer's lights to the tow vehicle's harness. The wires should be color coded. Ensure that all trailer lights work by turning on the brakes and turn signals. The trailer's lights should light up accordingly. **Do not transport the trailer if one or more lights are not working.**
9. Attach safety chains.
10. In case of a flat tire, there is a spare tire and lug wrench found in the trailer's storage compartment. Use the trailer leg stands to jack up the trailer and place the jack under the trailer's axle on the side that needs a spare tire installed.
11. Always verify the towing vehicle's emergency brake is engaged when parking the vehicle and trailer.
12. Double-chuck both of the trailer's tires and lock the hitch when parking the trailer.

TRAILERING TIPS

Check the following before driving:

- Steps are securely locked closed.
- Legs are pinned in place.
- Cover is securely attached to the trailer.
- Tire chucks are removed and stowed.
- All storage compartments are locked.

While driving:

- Accelerate and brake slowly. Vehicle will take longer to accelerate and brake while towing.
- Pay attention to the additional length of your rig. Make wider turns.
- Expect to have a lower gas mileage, plan your trip accordingly.

While reversing:

- Have someone act as a spotter.
- Check your surroundings.
- Proceed slowly and pay attention to where your trailer is going and keep an eye on the front end of your rig.
- If you hold the bottom of your steering wheel and turn- the trailer will go in the direction you turn the steering wheel.
- If making a turn, your trailer may end up at an angle less than 90 degrees. You will need straighten up and start again.
- Budget time and research reversing a trailer if you are unfamiliar with the process.

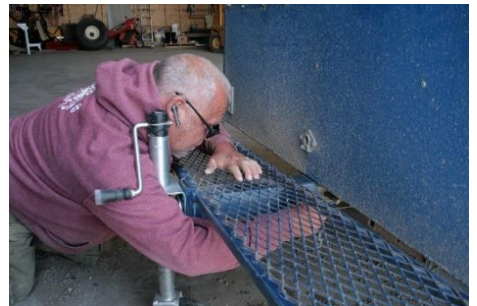
INSTRUCTIONS FOR TRAILER USE

Rolling Rivers Trailer Set Up

1. Budget at least two hours to set up a Rolling Rivers Trailer.
2. Find a level space to set up. The trailer must be level from side to side (vertically leveling the trailer is described in #14 below). Set up the trailer in shade whenever possible as it can become hot.
3. Use blocks to chuck the front and back of both tires. The trailer will easily move on a smooth surface or slight incline and cause injury if not secured.
4. If the trailer is being used indoors on a polished floor such as a gymnasium be sure to remove rocks from tires before entering the building. You may also want to place a tarp under wheels. If you are using the legs put casters under them to prevent scratching the floor.
5. Verify the towing vehicle's emergency brake is engaged before unhooking the Rolling Rivers Trailer.
6. Unplug the trailer's lights before unlocking the jack. Rotate the jack to a secure, vertical position and use the handle to lower the wheel to the floor.
7. Unlock the trailer's hitch in preparation to detach the Rolling Rivers Trailer from the towing vehicle.
8. Continue rotating the jack's handle to raise the hitch above the bolt. Check surroundings and verify the trailer is immobile.
9. Stabilize the front of the trailer by lowering the front legs before using the jack to lower the trailer until the front legs bear the trailer's weight. This will take pressure off of the trailer's jack. Make sure PVC pipes are around all of the Rolling River Trailer's legs. If on soft ground, use a 2"x4" wooden panel for support.
10. Unhook the trailer's safety chain.
11. Remove tarp, crossbars, and sheet to expose trailer bed. Push out to release crossbars. Store the tarp and sheet inside the trailer and the crossbars under the trailer.
12. To install optional front steps on trailer:



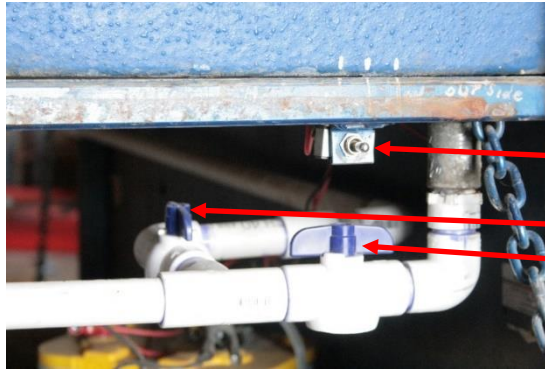
- a. Remove the jack's front pin and save it for installing the front steps.
- b. Remove the stepless trailer hitch
- c. Insert the trailer hitch with steps. **Never use the hitch with steps to tow the trailer.**
- d. Reinsert the trailer pin to the new trailer hitch.



13. Lower the rear legs. As with the front legs, remember to have PVC pipes around the legs for safety.

14. After grounding all trailer legs, make sure the trailer is still vertically sloped. If necessary, raise the trailer before lengthening the front legs to vertically slope the trailer. This encourages the flow of the river. Raising the slope will increase the rivers' flow rates.

15. On the front right side of the trailer, open the access panel to expose valves, pump switches, battery and supplies. This is where the presenter/trailer operator should stand. The front switch operates the pump. By-pass valve controls water volume. The by-pass valve closest to the operator will control the headwater closest to the operator. The by-pass valve furthest from the operator will control the headwater furthest from the operator.



Pump switch

Left headwater bypass valve

Right headwater bypass valve

16. Open rear access panel to expose water storage reservoir and pumps.

17. Use a hose to fill water box directly under the drain centered in main water tank. Fill the box until 4" from the top.

18. Once the water box is full, move the hose to the water reservoir. Begin primary building as reservoir fills. Close the back door of the trailer once both water containers are full (4" from the top).



Water reservoir

Water box

19. Optional: pull out trailer's side steps. Make sure steps are always secured, whether open or closed. **Tires and fenders are not to be used as steps, stepping on the valve can cause a flat tire!**

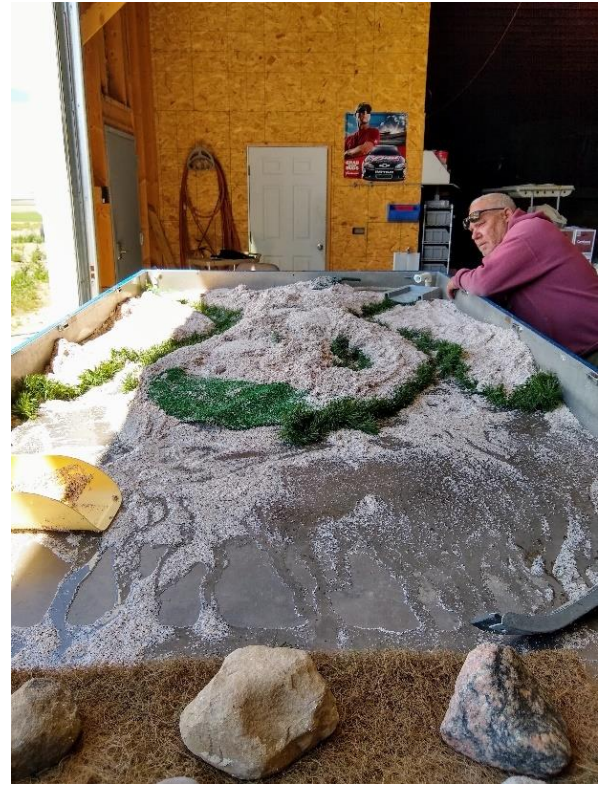


20. Make sure to clear the area around the drain of any sand before placing the filter mat over the drain. Place big, heavy rocks on the mat's corners to keep it in place.

21. If available, use an extension cord to connect the battery to a power outlet. If a power source is unavailable, most batteries can run the trailer for around 6 hours if fully charged, provided the trailer is turned off between presentations.

Building your Watershed

1. Attach a nozzle to the hose.
2. Use the hose to wet the sand thoroughly by spraying all over for 2-3 seconds. Fully saturated sand will be able to mold a “sandball”.
 - a. Water may need to be added to the sand again throughout the day. For example, if the sand begins to crumble and you can no longer form a “sandball”.
3. Use the grain feeder to get sand to the top two-thirds of the trailer.
4. Saturate bigger hills so water flows on the bottom.
5. Each spigot at the front of the trailer bed serves as a headwater for a river.
6. Use the corner of the feeder to draw an outline of a river from each headwater (two rivers total).
7. Verify each river is at least 3 inches from the trailer’s side wall
8. Use the feeder to dig the rivers.
9. Place stone or grass bed under headwaters.



10. Begin to vegetate the riverbanks by tucking garland into the sand.
 - a. Make sure the upstream garland overlays on top of the downstream garland.
 - b. If you plan to run the trailer more than once, double up on the garland when vegetating the riverbanks.
11. Turn on the pump and open the spigots to verify the rivers are flowing. Adjusting the by-pass valve helps optimize the rivers flow.
12. If drain clogs it may be cottonwood pollen. Remove the pollen to unplug the drain before continuing.
13. Begin to build structures based on topics you plan to discuss. See Rolling Rivers Trailer Educational Programs section for demonstrations.

PUTTING AWAY THE ROLLING RIVERS TRAILER

1. Make sure both spigots are closed, the by-pass valve is opened, and the pump is turned off.
2. Empty tanks at the back of the trailer. Some trailers have a hose you can attach to drain. It takes about 15 to 40 minutes to completely drain the trailer while tilted to the maximum slope. Remember to use the trailer's jack to adjust the its slope. The trailer should be at least 90% drained of water with 2 inches or less of water in the reservoir.
 - a. To remove water from the sand in the display area, push sand to the front of trailer and continue to let it drain.
3. If freezing temperatures are expected; the water lines need to thoroughly drained, with all valves left open.
4. Remove and rinse everything from the display area except for the sand and put items away in the appropriate box.
 - a. Be sure to save as much sand as possible since it is expensive.
 - b. Kids can help with the washing and putting away of materials.
5. Make sure all trailer legs are raised and secured.
6. Verify the trailer's steps are closed and locked.
7. Reinstall towing hitch if a step hitch was used. Adapt from Step 12 in Rolling Rivers Trailer Set Up.
8. Reinsert crossbars to the trailer before securely attaching the cover.
9. Lock all trailer compartments once everything is put away.

